

A Symptom-Level Approach to Treatment Seeking Behavior: Machine Learning & Relative Importance Approaches

Mallory Dobias, B.S.

Michael Mullarkey, M.A.

Jason Shumake, PhD

Christopher Beevers, PhD

NSDUH (2017):

33.4% with MDE did not receive treatment


27.9% with MDE and *severe impairment*
did not receive treatment

What on he] Toward understanding mental illness stigma and help-seeking: A social identity perspective

Kathleen A. Klik^{a,*}, Stacey L. Williams^b, Katherine J. Reynolds^a

Articles

The impact of stigma on behavioral health care utilization among active duty service members

Andrew J. Seidman  , Nathaniel G. Wade, David L. Vogel & Patrick Armistead-Jehle

Pages 11-17 | Received 13 Feb 2018, Accepted 08 Sep 2018, Published online: 17 Oct 2018

 Download citation  <https://doi.org/10.1080/08995605.2018.1522927>

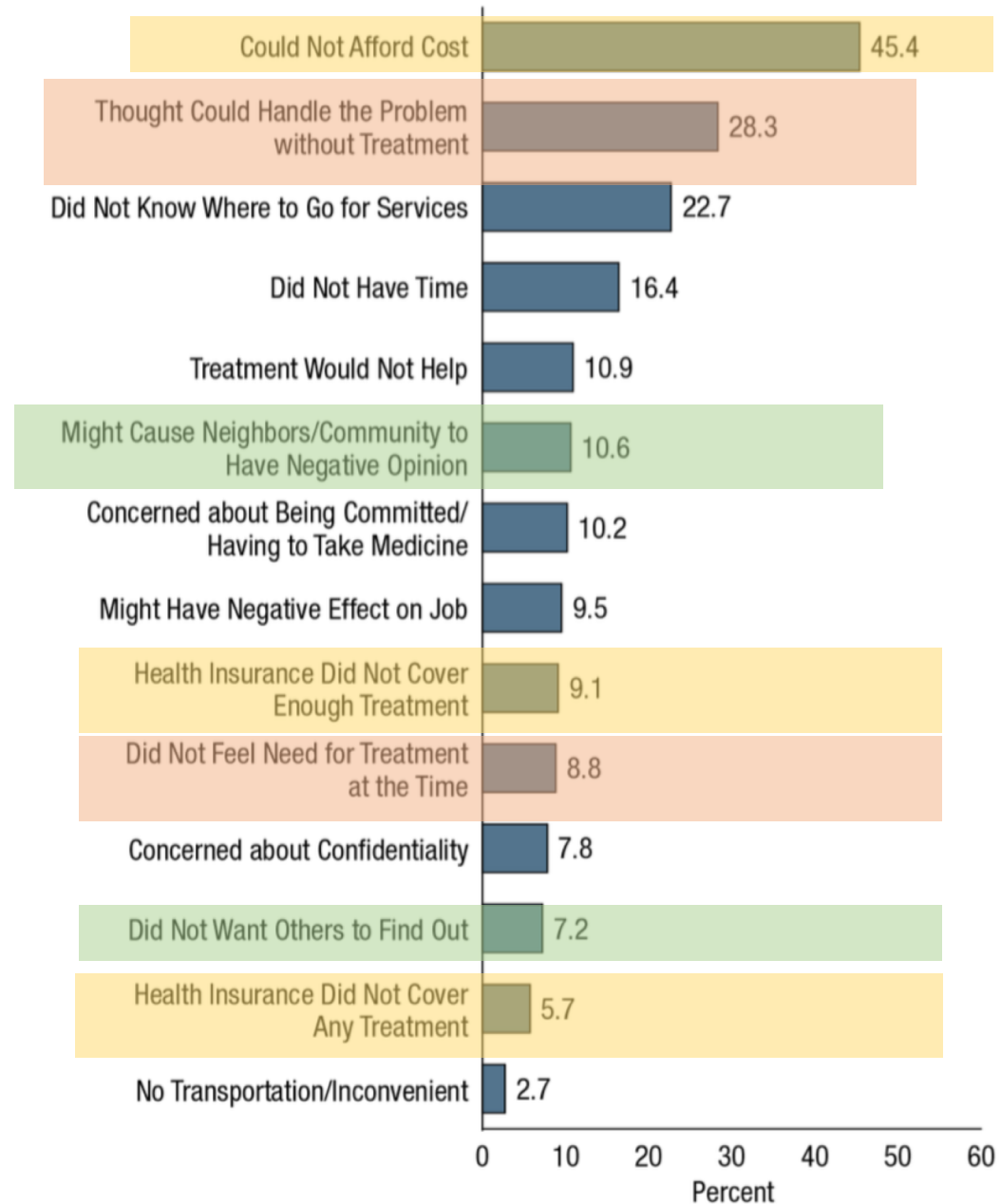


stigma and active help-seeking: systematic review and meta-analysis

Nina Schnyder, Radoslaw Panczak, Nicola Groth and Frauke Schultze-Lutter

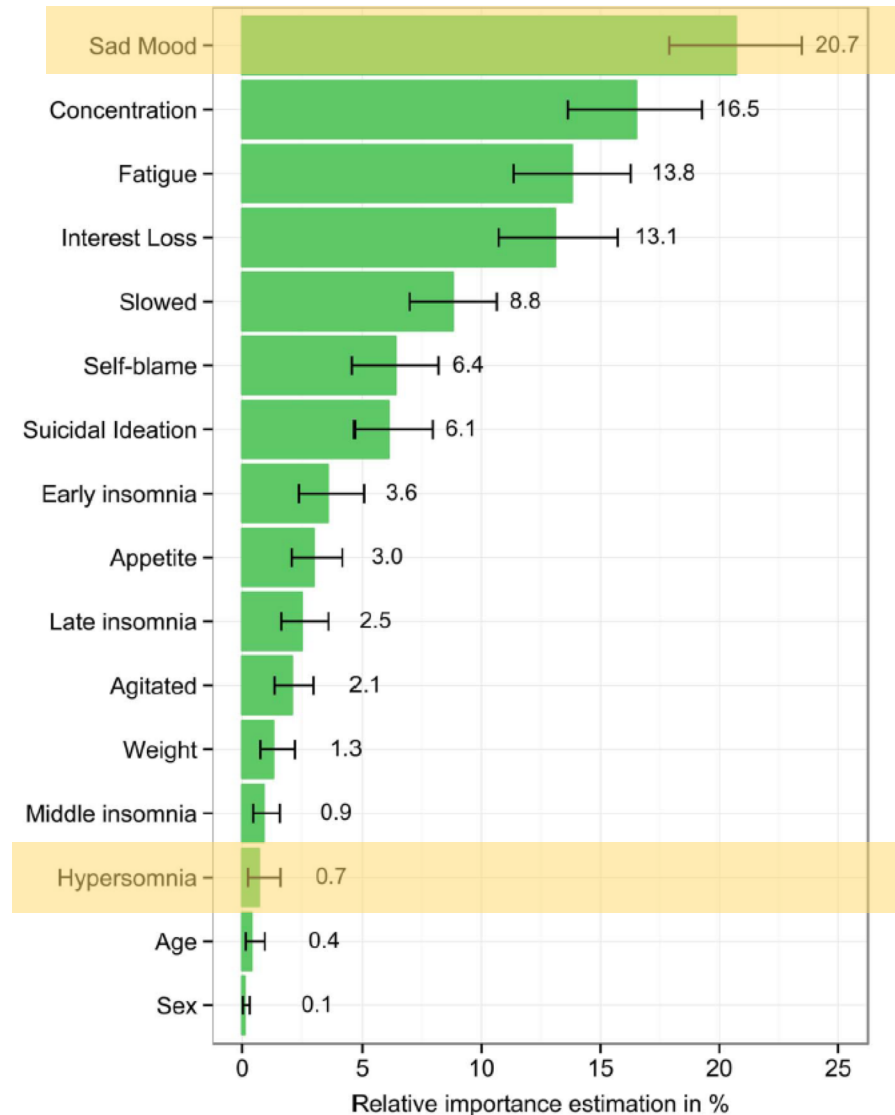


Figure 40. Reasons for Not Receiving Mental Health Services in the Past Year among All Adults Aged 18 or Older with a Perceived Unmet Need for Mental Health Care Who Did Not Receive Mental Health Services: Percentages, 2014



Sometimes, Symptom Presentation is Important

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re assessed through structured interviews or judgements about people's mental health sta-
eed, according to the "Behavioral Model of
of depression was positively related to help-
, [47](#), [60](#), [61](#)]. In addition, a longer duration of

NSDUH (2017)
Maagard, Seeralan, Schulz, & Levke Brut (2017)
Chin, Chan, Lam, Lam, & Wan (2015)
Fried & Nesse (2014)

Sometimes, Symptom Presentation is Important

Table 1. Relationships of predisposing and episode-related psychiatric characteristics to help-seeking during depression

Psychiatric Characteristic	Help Sought		Type of Help Sought			Analysis		
	No (n = 127)	Yes (n = 59)	Mental Health Professional (n = 41)	Nonpsychiatric Physician (n = 12)	Other Professional (n = 6)	Help vs No Help Comparison ^a	Three- group Comparison ^b	Discriminant Function Loading
Predisposing								
Prior depressive episodes (% yes)	63.8	61.0	58.5	58.3	83.3	0.13	0.44	0.07
Prior professional help (% yes)	33.9	61.0	58.4	58.3	83.4	12.16**	9.37**	0.36
Family history of disorder (% yes)	65.4	66.1	63.4	58.4	100.0	0.01	0.26	0.05
Index episode								
Length (weeks) ^c	7.53	19.85	25.32	6.58	9.00	3.78***	9.53***	0.46
Symptoms (% yes)								
Depressed mood	85.0	94.9	92.7	100.0	100.0	3.77*	3.48	0.20
Lack of interest	81.1	96.9	97.6	100.0	83.3	8.06**	9.09*	0.36
Appetite, weight change	65.9	72.9	73.2	83.3	50.0	0.91	2.04	0.14
Sleep problems	75.6	91.5	92.7	100.0	66.7	6.55*	8.90*	0.34
Lack of energy	81.9	83.1	80.5	91.7	83.3	0.04	0.83	0.01
Psychomotor change	64.6	72.9	75.6	75.0	50.0	1.26	2.04	0.16
Worthlessness/guilt	69.3	84.7	92.7	58.3	83.3	5.02*	10.40**	0.29
Slowed thinking	79.5	93.2	92.7	100.0	83.3	5.58*	6.44*	0.28
Suicidal ideation	6.3	28.8	29.3	16.7	50.0	17.55***	15.48***	0.47

Tiredness (OR 1.91, 95% CI 1.04–3.51)

Lack of concentration (OR 4.40, 95% CI 1.80–10.74)

Thoughts of death (OR 2.10, 95% CI 1.36–3.24)

Hämäläinen et al. (2004)

Dew et al. (1991)

Dew, Bromet, Schulberg, Parkinson, & Curtis (1991)

Hämäläinen et al. (2004)

Perceived Need

Age

Self-Stigma

Public-Stigma

Health Insurance Status

Income

Race

Gender

Sex

Sadness

Anhedonia

Fatigue

Low Appetite

High Appetite

Low Sleep

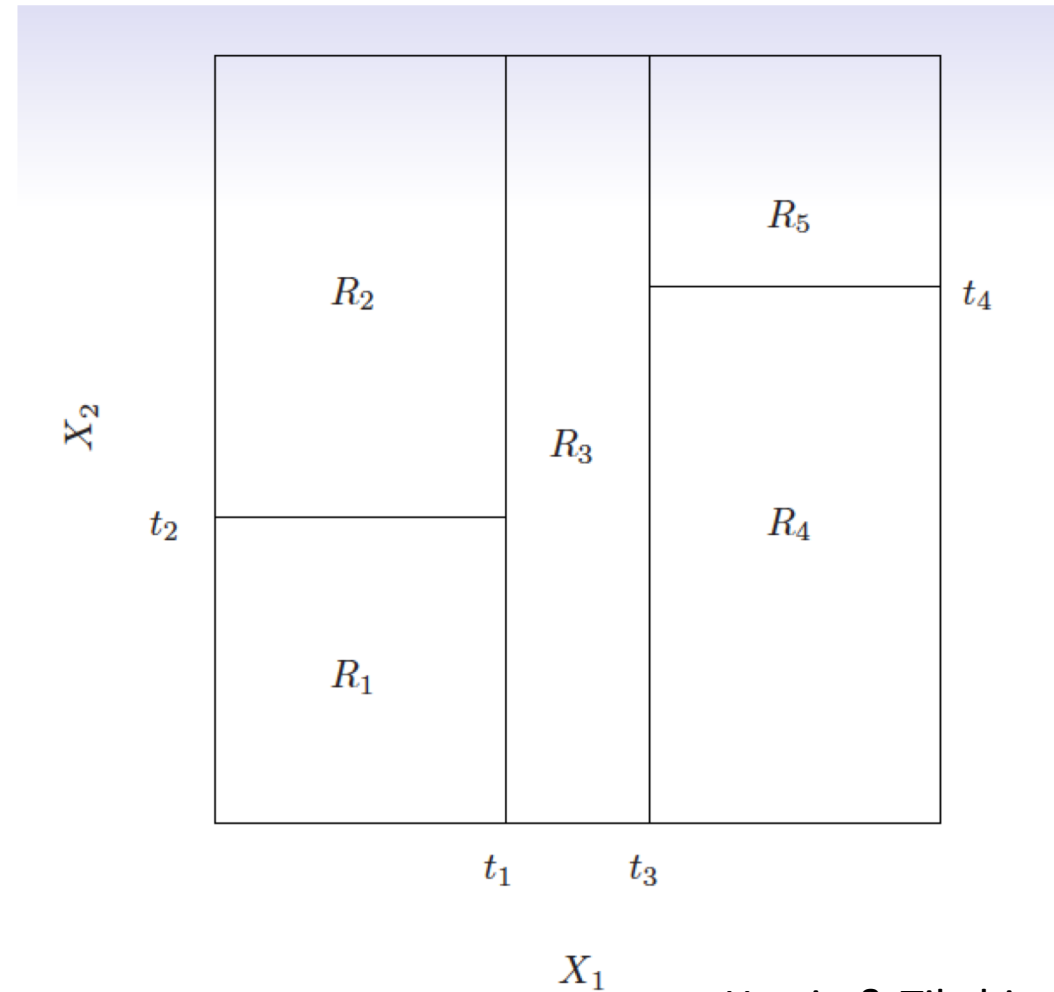
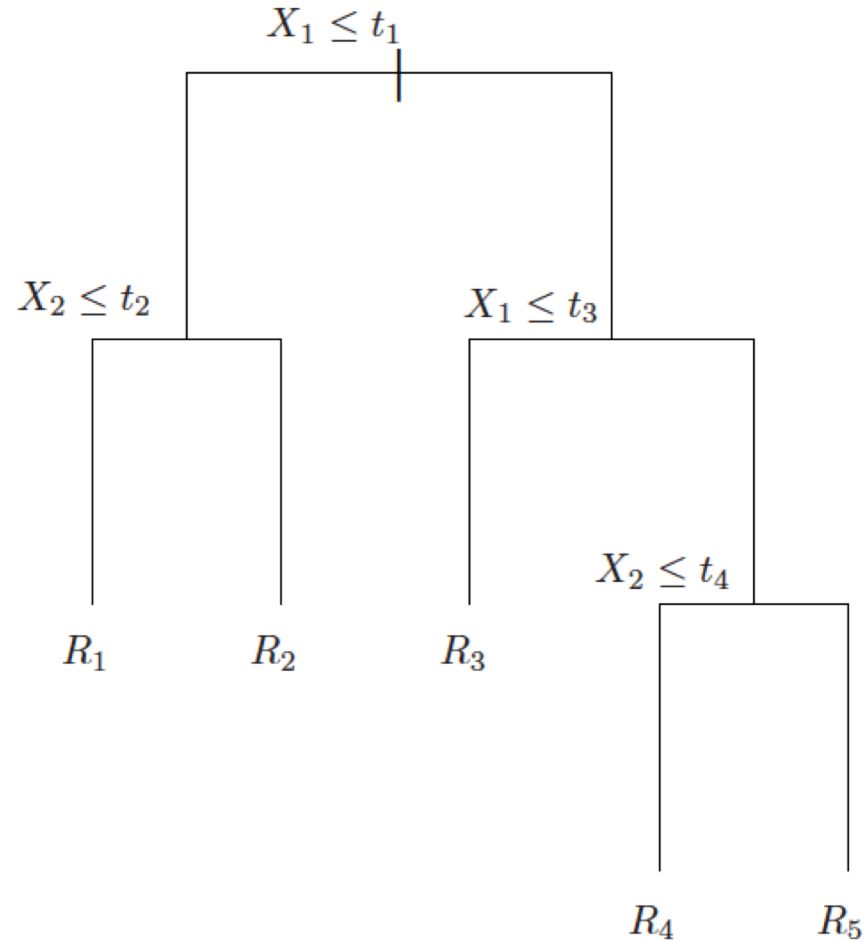
High Sleep

Concentration

Guilt/Worthlessness

Self-Hatred

Method: Random Forests (and Classification Trees)



Hastie & Tibshirani (2016)
Hastie, Tibshirani, & Friedman (2009)

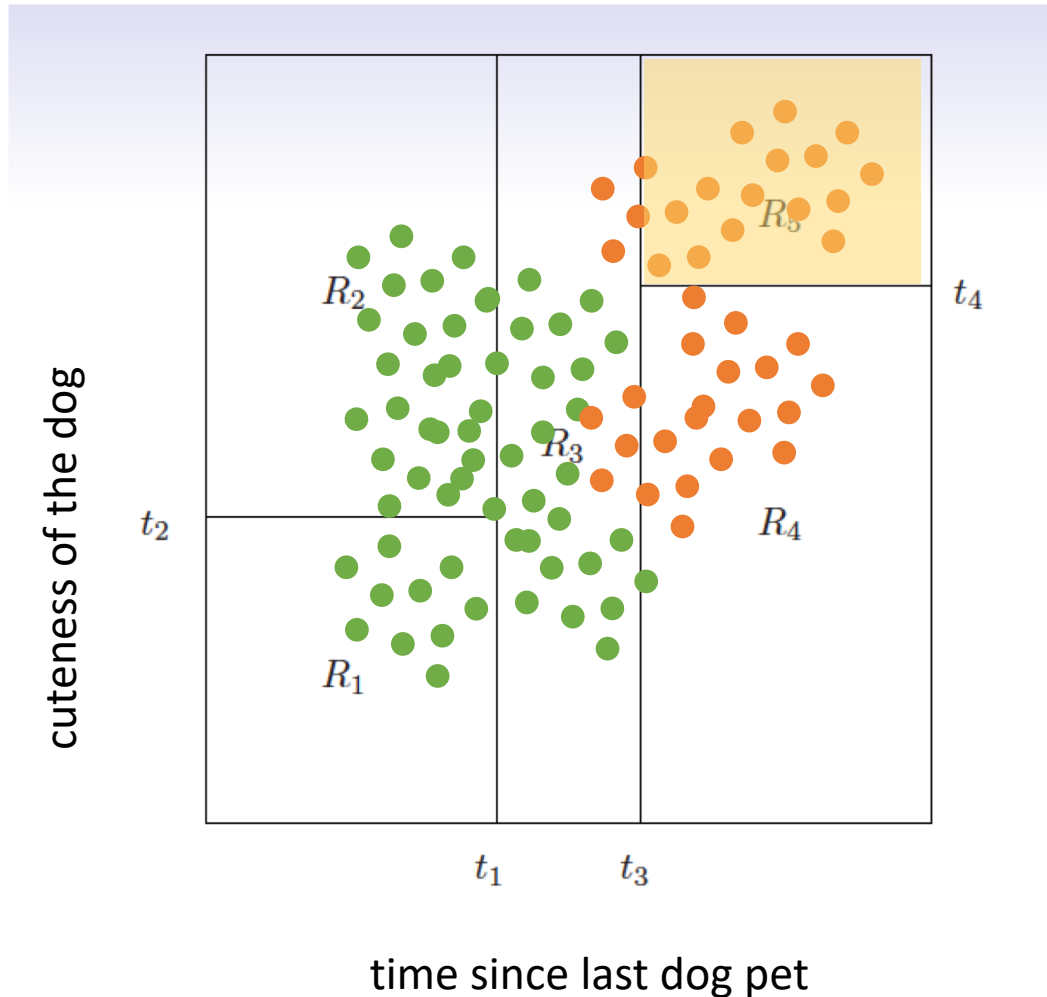
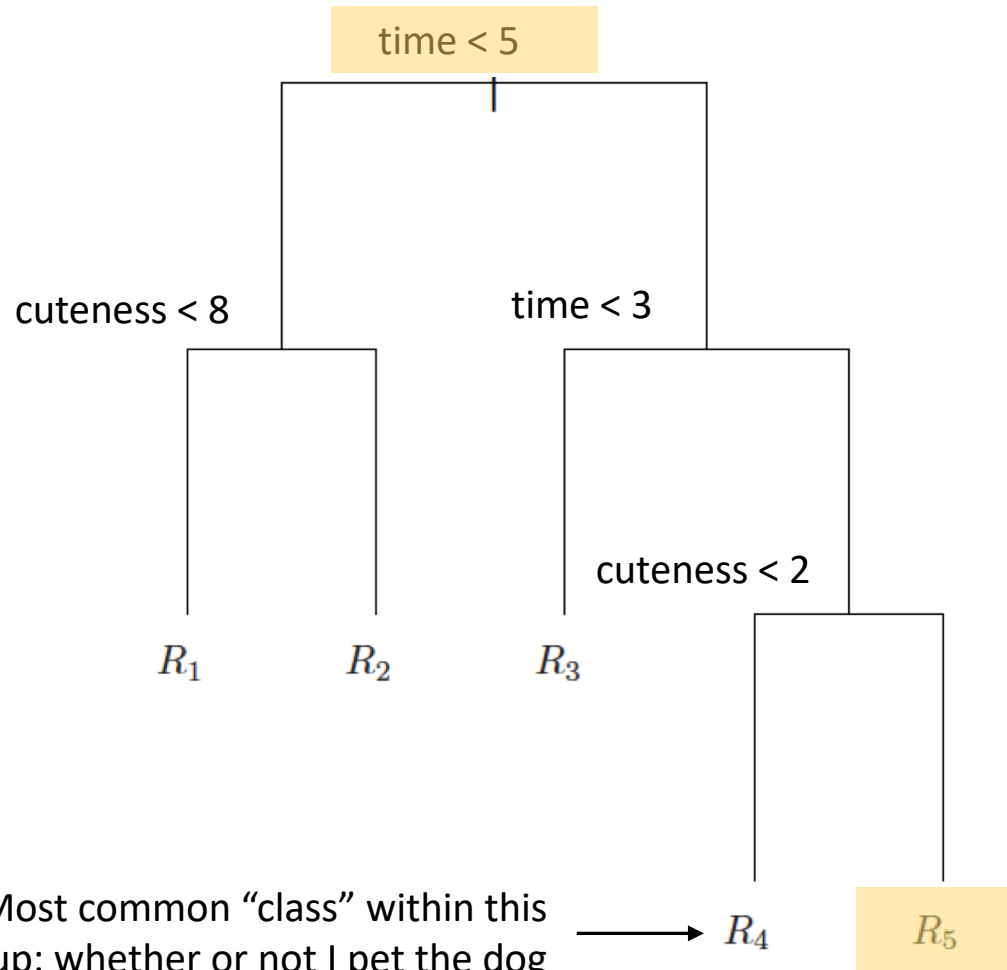


Example: Classification Tree

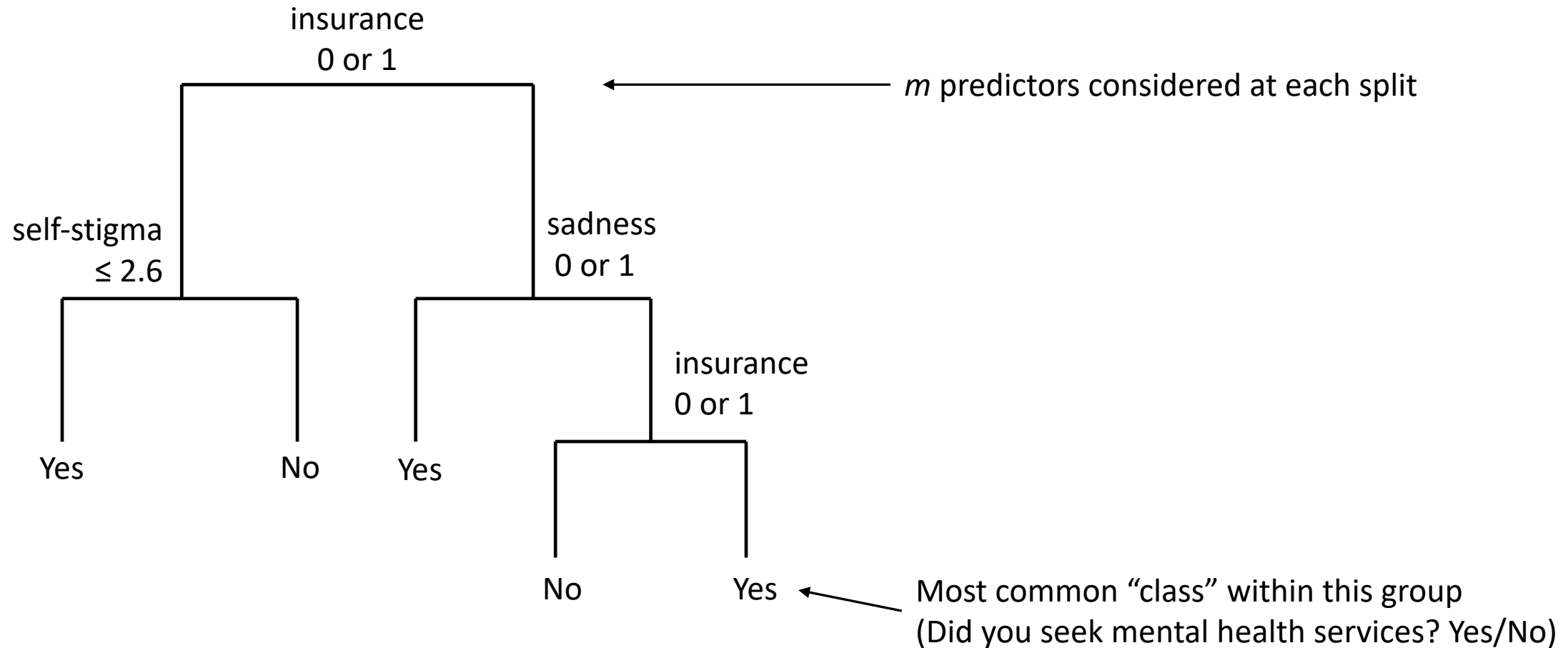
Outcome: whether I pet a dog (Yes/No)

Yes = orange

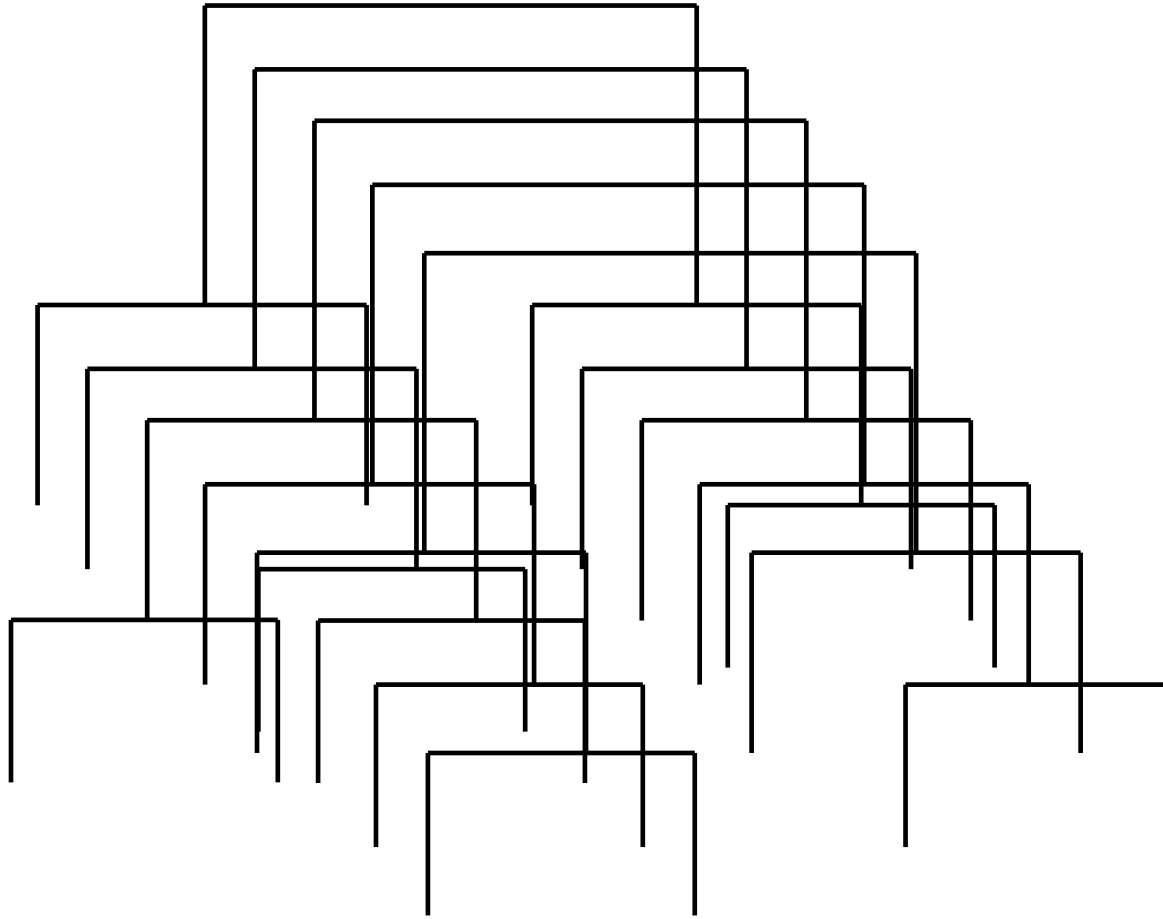
No = green



Example: Classification Tree



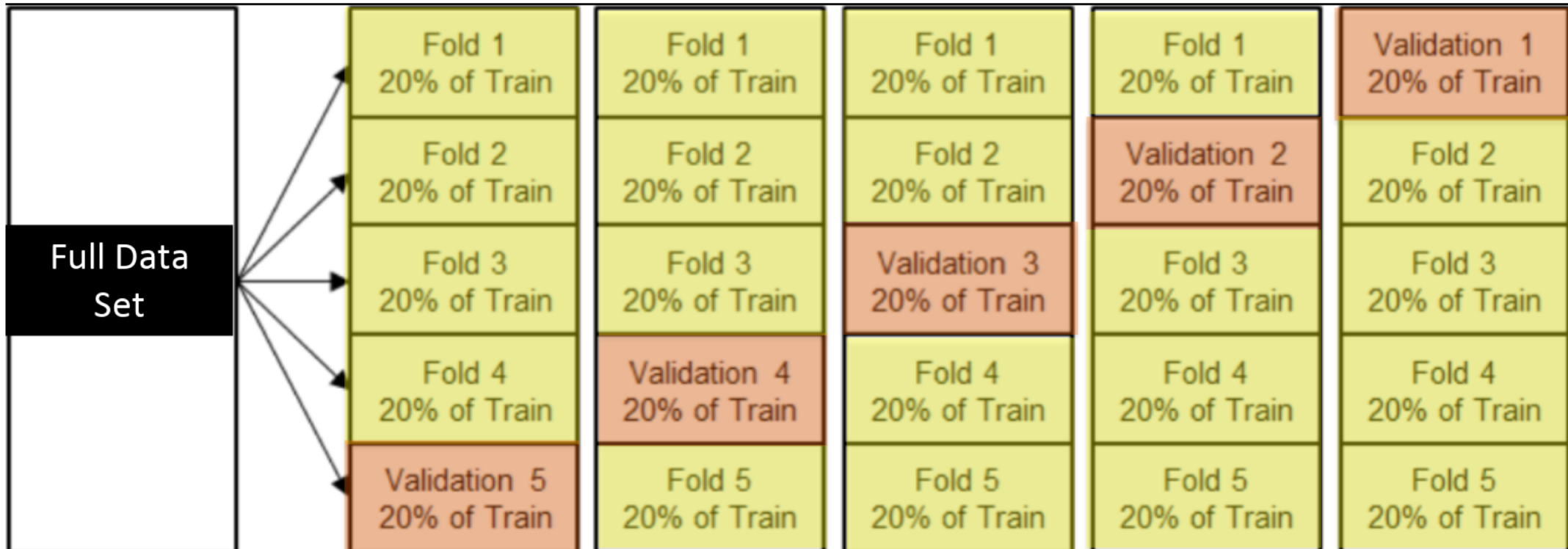
Method: Random Forests



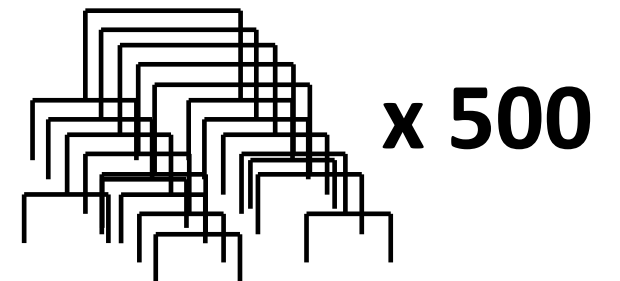
x 500

Yarkoni & Westfall (2017)
Wei, Lu, & Song (2015)
Grömping (2009)

Method: Random Forests + Cross Validation



amount of “out of sample” deviance explained



Method: Random Forests, Variable Importance



Method

N = 216; MTurk

Age; M = 26.8 (SD = 5.72)

29.17% female sex

61 female gender

154 male gender

1 male transitioning to female

63.42% White/Caucasian

Do you at least sometimes feel disappointed in yourself?

☐ Yes

☐ No

Method

Income *Self-reported income bracket in the past year (ranging from <10,000 - >150,000)*

Insurance *Self-reported insurance status (Yes, No)*

Perceived Need *“Did you think you needed help for emotional or mental health problems?” (Yes, No)*

Self-Stigma *(Downs & Eisenberg, 2012)*

Public-Stigma *(Downs & Eisenberg, 2012)*

Sex *Self-reported biological sex (male, female, prefer not to answer)*

Gender *Self-reported gender (male, female, male transitioning to female, female transitioning to male, queer, non-binary, prefer not to answer)*

Race

Age

DURING THE PAST 12 MONTHS, when you felt **the worst** with your mental or emotional health, which difficulties were you experiencing? (Please check all that apply)

- ☐ Sadness
- ☐ Losing interest in previously enjoyed activities
- ☐ Feeling tired, low energy
- ☐ A loss of appetite
- ☐ An increase in appetite
- ☐ Difficulty falling and/or staying asleep
- ☐ Sleeping too much
- ☐ Trouble concentrating
- ☐ Feeling guilty or worthless
- ☐ Self-dislike or self-hatred

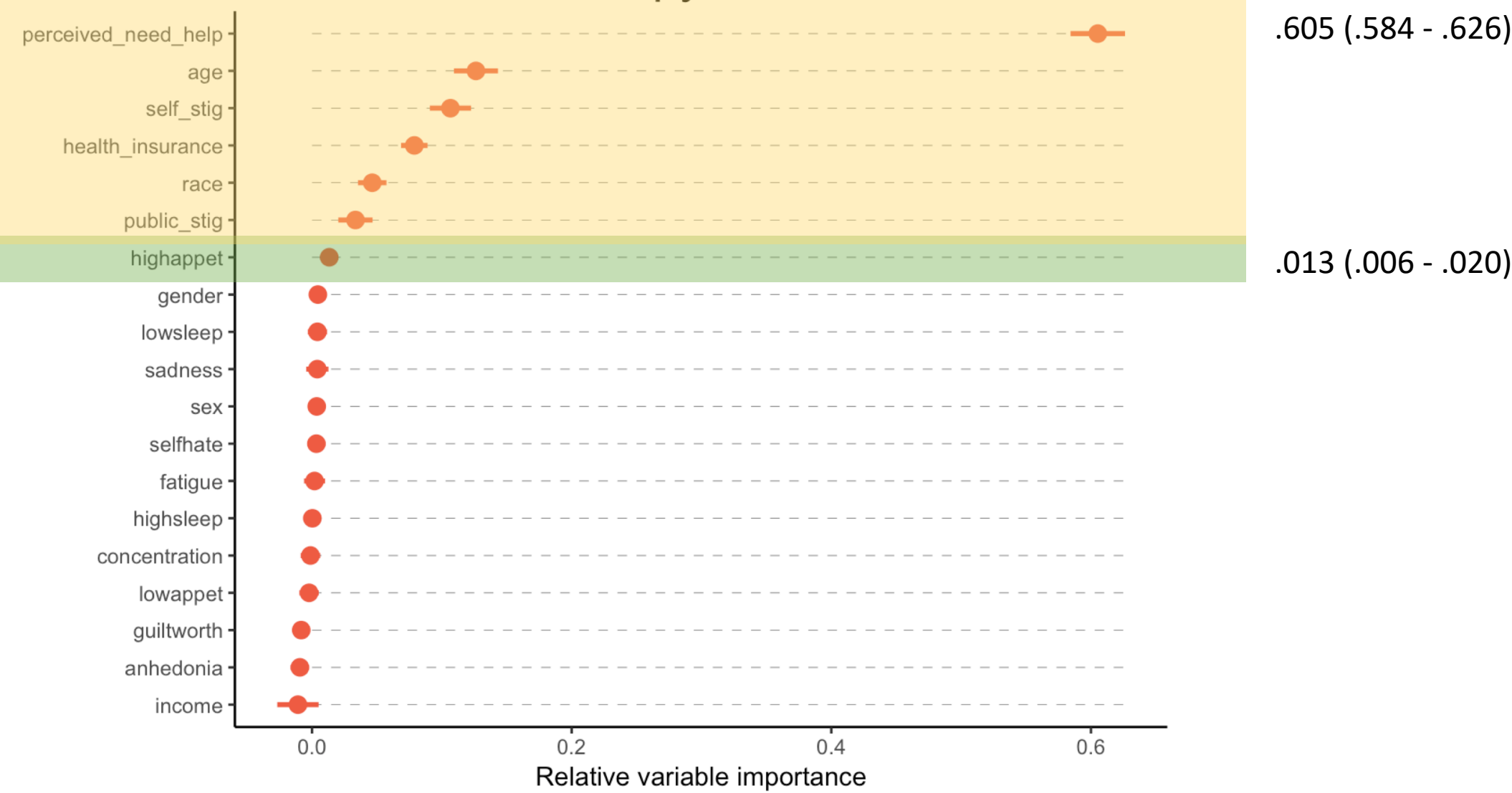
DURING THAT SAME TIME IN THE PAST 12 MONTHS, when you felt **the worst** with your mental or emotional health, did you seek out **counseling or therapy** for your mental or emotional health from a health professional?

☐ Yes

☐ No

55.6% of people had
sought out mental
health counseling in
past year

TherapyAtWorst



18.6% Total Deviance Explained

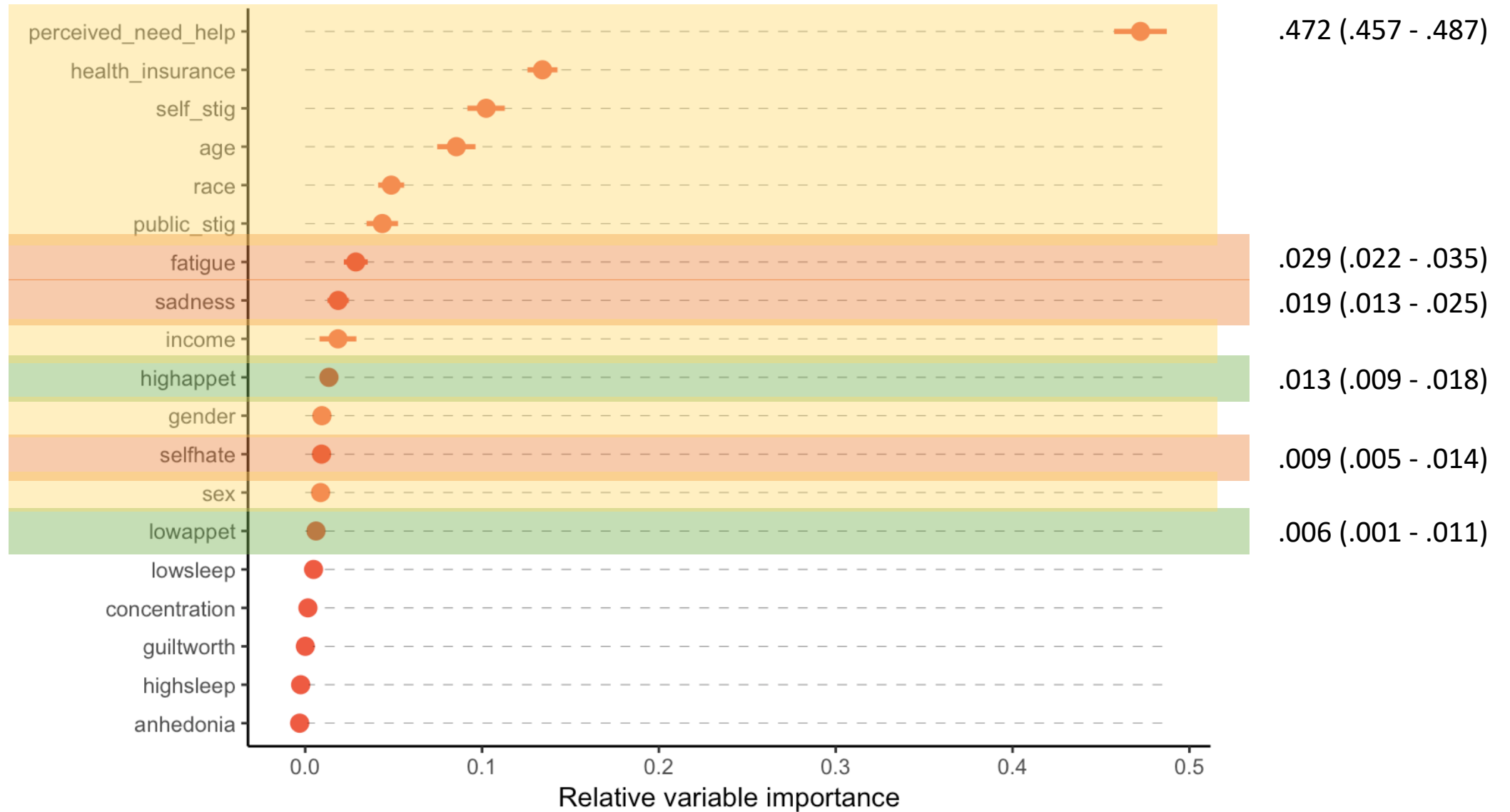
DURING THAT SAME TIME IN THE PAST 12 MONTHS, when you felt **the worst** with your mental or emotional health, did you seek out a **prescription for medicine** from a health professional for your mental or emotional health?

☐ Yes

☐ No

53.2% of people
sought out medication
for mental health in
the past year

MedicationAtWorst



29.8% Total Deviance Explained

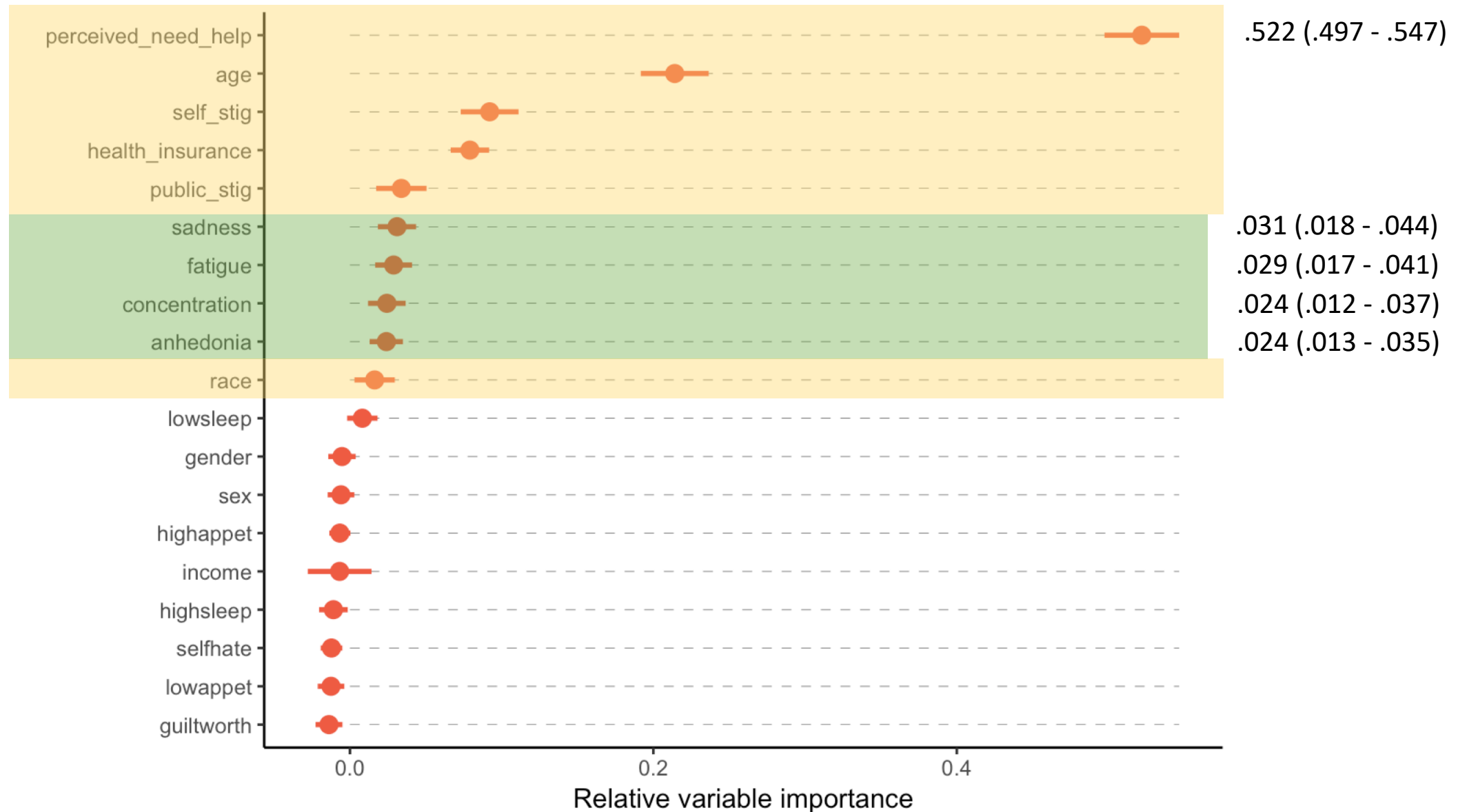
DURING THAT SAME TIME IN THE PAST 12 MONTHS, when you felt **the worst** with your mental or emotional health, did you seek out **complementary or alternative forms of treatment** for your mental or emotional health (e.g. acupuncture, vitamins or supplements, herbal medicine, yoga, meditation, aromatherapy, etc.)?

☐ Yes

☐ No

60.2% of people
sought out alternative
treatments for mental
health in the past year

AlternativeAtWorst



13.0% Total Deviance Explained

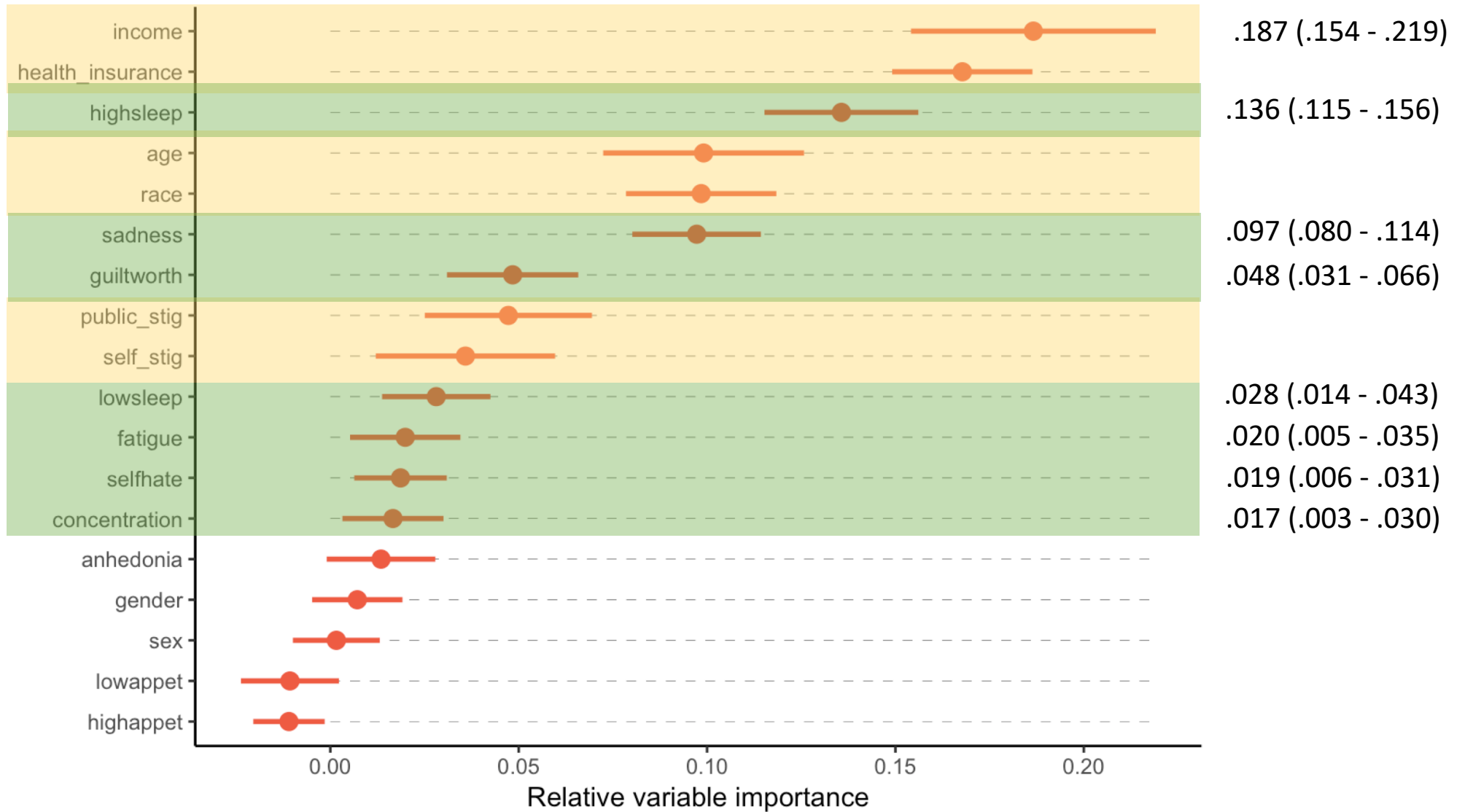
Exploratory Analysis

DURING THAT SAME TIME IN THE PAST 12 MONTHS, when you felt **the worst** with your mental or emotional health, **did you think you needed help** for emotional or mental health problems?

☐ Yes

☐ No

PerceivedNeedHelp



5.47% Total Deviance Explained

So... what does this mean?



Mojtabai et al. (2011)

Hämäläinen et al. (2004)

Dew et al. (1991)

Guina, Nahhas, Nguyen, & Farnsworth (2018)

Take-Home Points:

- Symptom-level analysis is a new take on treatment-seeking behavior
- Random forests = a rigorous scientific test
- Perceived need “takes the cake” (and so do other structural variables)
- Present variables weren’t great at predicting perceived need
- Symptom severity (versus presence)?

Thank you!

TherapyAtWorst

